

## Questioning the role of targeted respiratory physiotherapy over and above a standard clinical pathway in the postoperative management of patients following open thoracotomy

### Synopsis

*Summary of:* Reeve JC et al (2010) Does physiotherapy reduce the incidence of postoperative pulmonary complications following pulmonary resection via open thoracotomy? A preliminary randomised single-blind clinical trial. *Eur J Cardiothorac Surg* 37: 1158–1166. [Prepared by Kylie Hill, CAP Editor.]

*Question:* Does routine prophylactic targeted respiratory physiotherapy after elective pulmonary resection via open thoracotomy decrease the incidence of postoperative pulmonary complications and reduce length of hospital stay?

*Design:* Randomised, controlled trial with concealed allocation in which those who collected outcome measures were blinded to group allocation.

*Setting:* Hospital ward of a tertiary referral centre in Auckland, New Zealand.

*Participants:* Adults scheduled for pulmonary resection via open thoracotomy.

*Exclusion criteria:* (i) unable to understand written and spoken English, (ii) tumour invasion of the chest wall or brachial plexus, (iii) physiotherapy for a respiratory or shoulder problem within 2 weeks prior to admission, (iv) development of a postoperative pulmonary complication prior to randomisation on Day 1 postoperatively, or (v) intubation and mechanical ventilation  $\geq$  24 hours following surgery. Randomisation of 76 patients allocated 42 to the intervention group and 34 to the control group.

*Interventions:* Both groups received usual medical and nursing care via a standardised clinical pathway, which included early and frequent position changes, sitting out of bed on the first postoperative day, early ambulation and frequent pain assessment. In addition, the intervention group received daily targeted respiratory physiotherapy, which comprised deep breathing and coughing exercises, assistance with ambulation, and progressive shoulder and thoracic cage exercises.

*Outcome measures:* The primary outcome was incidence of postoperative pulmonary complications, defined using a standardised diagnostic tool. The secondary outcome was the length of hospital stay.

*Results:* The primary and secondary outcomes were available for all enrolled patients. Neither the incidence of postoperative pulmonary complications [mean difference intervention-control 1.8% (95% CI –10.6 to 13.1%)] nor the hospital length of stay [intervention group median 6.0 days, control group median 6.0 days;  $p = 0.87$ ] differed significantly between groups. The overall incidence of postoperative pulmonary complications (3.9%) was lower than expected.

*Conclusion:* In adults following open thoracotomy, the addition of targeted respiratory physiotherapy to a standardised clinical pathway that included early mobilisation did not reduce the incidence of postoperative pulmonary complications or change length of hospital stay.

### Commentary

This study is a high-quality randomised controlled trial, and novel in comparing the efficacy of a postoperative physiotherapy program with a no-physiotherapy control group in patients undergoing open lung resection. Findings accord with the conclusion of a systematic review of physiotherapy after cardiac surgery (Pasquina et al 2003) that there is no evidence of benefit of routine, prophylactic respiratory physiotherapy over standard medical/nursing care. In response, one would anticipate that physiotherapists working in this field, particularly those in Australia and New Zealand (Reeve et al. 2007), would re-examine their current practices.

Notably, primary and secondary outcomes exhibited 'floor' effects, testament to the quality of care in such a first world, tertiary referral hospital setting. Postoperative pulmonary complication (PPC) incidence for the study cohort was remarkably low (3.9%), as was length of stay (median 6 days, against the median 4–5 days to chest drain removal), suggesting limited scope for physiotherapy-mediated reductions.

The described 'respiratory-targeted' physiotherapy program was arguably equally focussed on restoration of physical function through mobilisation and limb exercises. This raises the larger

question of the role of physiotherapy for thoracic surgical populations. Is our putative role solely to prevent complication? Or is it to accelerate the return to pre-morbid function? Interestingly, secondary findings of the study (Reeve et al 2010) showed that the physiotherapy program did improve shoulder pain/function at discharge. Notwithstanding economic pressures to rationalize healthcare, wholesale withdrawal of respiratory physiotherapy services from thoracic surgical units would likely meet opposition, from both surgical teams (being cognisant of the severity of PPC when it does occur) and physiotherapists themselves. Redefining the role of physiotherapy in terms of: i) identification of high (PPC) risk patients, ii) treatment of those (few) patients developing PPC, and/or iii) restoration of pre-morbid physical function, would appear a prudent method of 'translating' this evidence into practice.

**Andrew Hirschhorn**, Westmead Private Physiotherapy Services, Clinical Research Institute, Sydney, Australia

### References

- Pasquina P et al (2003) *BMJ* 327: 1379.
- Reeve J et al (2007) *Physiother Res Int* 12: 59.
- Reeve J et al (2010) *J Physiother* 56: 245.